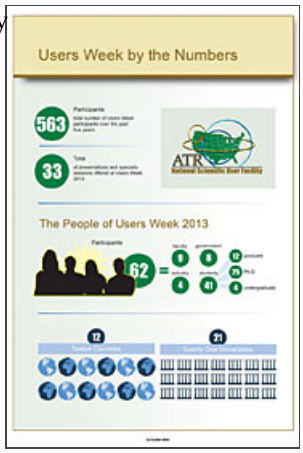
Materials and Fuels Complex researcher Curtis Clark shows attendees one of the many testing capabilities at the Fuels and Applied Science Building during the Advanced Test Reactor National Scientific User Facility Users Week site tour.

Nuclear academics, professionals converge for 6th annual Users Week

By Julie Ulrich, *INL Communications & Governmental Affairs*

How do you design a nuclear reactor experiment? Why are experiments crafted in a particular way? How do I propose research that will be funded? These questions and more were answered at this year's 6th annual Advanced Test Reactor National Scientific User Facility (ATR NSUF) Users Week held June 10-14 at University Place (the satellite campus for Idaho State University and University of Idaho) in Idaho Falls.

This nuclear research-themed week is the user facility's opportunity to update the user community on nuclear energy issues and tools, conduct a research forum where users can come and present their research, run specialized workshops, and build collaboration among academic, industry and government institutions. Users Week is key to fulfilling the user facility mission to provide nuclear energy researchers access to world-class capabilities to advance nuclear science and technology.



Users Week by the Numbers. ***Click here for larger image.***

"The goal of Users Week is to encourage nuclear scientists and engineers to pursue research that will impact the future of our country's energy needs and enable them to build relationships with INL and other nuclear fuels and materials researchers," said Frances Marshall, ATR NSUF program manager and acting scientific director.

Each Users Week event is modified to offer users something new. This year the event was organized around the user experience — how a user can successfully propose and get research done. Organizers kept the most popular aspects from previous years, but expanded the focus beyond ATR NSUF research and techniques. This year's event highlighted how specific experiments align with some of the main goals of INL and the U.S. Department of Energy's Office of Nuclear Energy (DOE-NE) in the areas of: Light Water Reactor Sustainability, Fuel Cycle Research and Development, and Advanced Reactor Concepts.

"With this change in format, participants should gain a greater understanding of current DOE-NE programs, research trends and issues, ATR NSUF research, and our partner facilities," said Jeff Benson, ATR NSUF education coordinator.

Participants from 12 different countries and 21 universities could attend 33 different presentations on topics such as research, program information and facility capabilities.

Understanding the interaction with DOE-NE is important because a key criterion to receiving an ATR NSUF proposal award is that the proposed research must be consistent with one of DOE-NE's missions.

The week-long event opened with a workshop on ATR NSUF research and capabilities, and then continued with sessions grouped together under one of the DOE-NE programmatic goals. Users Week also featured a Site tour highlighting INL research capabilities and a specially tailored workshop on post-irradiation examination of nuclear fuels and materials.

Yongho Sohn, professor and associate director of the Materials Science and Engineering Department at the University of Central Florida (UCF), attended the very first Users Week and returned as a presenter this year. He finds the event particularly valuable to students and brought four with him from UCF this year.

"I recommend the event to my students because at the university they typically work on a small and focused piece of the nuclear puzzle," said Sohn, "but Users Week shows them the big picture and how the research they're doing fits into the larger objectives of the technology."

Most of the week's presenters are directly involved in ATR NSUF research projects. In addition to sharing their research, presenters gave potential users advice on working through the proposal and research process. Full irradiation experiments — those that begin in the experiment design stage are irradiated in a reactor and continue all the way through post-irradiation examination — have great

Did you know?

Since its designation as a National

value, but can take a long time to complete.

Presenter Darryl Butt, Materials Science and Engineering professor at Boise State University and an associate director of the Center for Advanced Energy Studies, explained this lengthy process during his presentation on Light Water Reactor Fuels. "Be patient with irradiation experiments," he said. "These experiments are complicated and require extensive planning and analysis, but the valuable research that results makes the planning and time worth the effort." He encouraged users to recognize that the timeline for these experiments can span several years, but not to let that discourage them.

Scientific User Facility in 2007, ATR NSUF has awarded 69 research experiments involving 20 universities and three other national laboratories. To learn more about proposing research and capability offerings, visit the ATR NSUF website at http://atrnsuf.inl.gov.

The EBR-I atomic museum and National Historic Landmark was just one of many INL facilities that participants visited during the Users Week Site tour.

Organizers invited three ATR NSUF partner facilities to give spotlight presentations on the capabilities their facilities offer and discuss any current research projects utilizing their facilities. Guest speakers presented on partner facilities at the Westinghouse Materials Center of Excellence Laboratories (MCOE) Hot Cell Facility, the Microscopy and Characterization Suite in the Center for Advanced Energy Studies and the Massachusetts Institute of Technology Reactor.

In his presentation, Gordon Kohse, a principal research engineer at MIT, said being an ATR NSUF partner facility has enabled the MIT reactor facility to gain more experiment experience, which makes it more desirable to both ATR NSUF users and other customers. It has also helped build technical relationships and boost visibility for their capabilities.

Collaborate and share: Research poster session

After a full day touring INL Site facilities, participants returned to the Center for Advanced Energy Studies for a combined poster session and social event. Students shared their research posters with other attendees and the top three student poster submissions won a 2013 Neutron Award.

"The goal of the poster session is to encourage students to study problems of interest to the nuclear community and give them a place where they can show their work and teach others how to do the same," said Jeff Terry, chair of the Advanced Test Reactor Users Organization and associate professor at the Illinois Institute of Technology.

At stake were the Golden, Silver and Thermal Neutron awards based on several content categories. Each winner received a certificate and a one year gift membership to the American Nuclear Society. This year's recipients of the Neutron Awards were:

ATR NSUF Users Organization chair Jeff Terry (right) presents the Golden Neutron Award to Ahmad Alsabbagh.

• **Golden Neutron Award Winner**: Ahmad Alsabbagh, North Carolina State University, "Consequences of Neutron Irradiation on ECAP Steel"

• **Silver Neutron Award Winner**: Somayeh Pasebani, University of Idaho, "Spark Plasma Sintering of Lanthana Bearing Nanostructured Ferritic Steels"

• **Thermal Neutron Award Winner**: Harn Chyi Lim, Arizona State University, "Microstructural Effects on Thermal Conductivity of Uranium Oxide"

"I'm very proud of all of the 2013 Neutron Award winners," said Terry. "The future is in great hands."

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